

WHAT IS CLAIMED IS:

1. A detoxified and immunologically active protein
5 having an amino acid sequence of heat-labile enterotoxin of *E. coli*, in which position 63 or positions 110 and 112 is mutated in a site-directed manner.
2. A detoxified and immunologically active protein
10 having an amino acid sequence of heat-labile enterotoxin of *E. coli*(SEQ ID NO:3), in which serine residue at position 63 is substituted with tyrosine.
3. A DNA sequence(SEQ ID NO:4) encoding the
15 detoxified and immunologically active protein of claim 2.
4. A recombinant expression vector pBlueKS-/LTS63Y
which comprises the DNA of claim 3.
- 20 5. *Escherichia coli* Top10F'-pBlueKS-/LTS63Y(KCTC 0648BP) transformed with the recombinant expression vector pBlueKS-/LTS63Y of claim 4.
6. A detoxified and immunologically active protein
25 having an amino acid sequence of heat-labile enterotoxin of *E. coli*(SEQ ID NO:5), in which glutamic acid residues at positions 110 and 112 are deleted.
7. A DNA sequence(SEQ ID NO:6) encoding the
30 detoxified and immunologically active protein of claim 6.
8. A recombinant expression vector pBlueKS-/LT Δ 110/112 which comprises the DNA of claim 7.
- 35 9. *Escherichia coli* Top10F'-pBlueKS-/LT Δ 110/112(KCTC 0649BP) transformed with the recombinant expression vector pBlueKS-/LT Δ 110/112 of claim 8.

10. A process for preparing the detoxified and immunologically active protein(mutant LT) of claim 1 which comprises the steps of culturing a recombinant 5 microorganism transformed with an expression vector comprising a DNA encoding the mutant LT and isolating the recombinant mutant LT from the culture.

11. The process for preparing the detoxified and 10 immunologically active protein of claim 10, wherein the recombinant microorganism is *Escherichia coli* Top10F'-pBlueKS-/LTS63Y(KCTC 0648BP) or *Escherichia coli* Top10F'-pBlueKS-/LTA110/112(KCTC 0649BP).

15 12. A diarrheal vaccine comprising an active ingredient of the detoxified and immunologically active protein of claim 1 and pharmaceutically acceptable carrier.

20 13. A mucosal adjuvant comprising an active ingredient of the detoxified and immunologically active protein of claim 1.